

## AMENDMENTS TO THE CLAIMS

The following represents the current status of all the claims presented in this present application including all amendments made by this paper. Please amend claims 135, 152 and 168 as indicated and add new claims 183-211.

1-134(canceled).

135(currently amended). A non-human transgenic vertebrate produced by the steps of:

- (a) administering by injection into a testis of a male non-human vertebrate a transfection mixture comprising at least one polynucleotide encoding a gene product in operable linkage with a promoter comprised in a virus or virus-derived DNA, wherein said testis contains the germ cells of the male non-human vertebrate, and wherein said germ cells are selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa; and
- (b) allowing the polynucleotide encoding a gene product to be taken up by, and released into, the germ cells so that the released polynucleotide comprised in a virus or virus-derived DNA is incorporated into the genome of

the germ cells of said male non-human vertebrate,  
~~wherein the polynucleotide is one that does not encode~~  
~~oncogene products~~ wherein the polynucleotide expresses  
an agent which is of therapeutic benefit for use in  
human or veterinary medicine or well being or wherein  
the polynucleotide provides a suitable anatomical or  
physiological phenotype for human xenograft  
transplantation.

136(original). The non-human transgenic vertebrate of claim 135, wherein the polynucleotide comprises at least one biologically functional gene.

137(original). A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 135 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the transfected xenogeneic polynucleotide.

138(original). The progeny non-human transgenic vertebrate of claim 137, being a male comprising native germ cells carrying in their genomes at least one xenogeneic polynucleotide.

139(original). The non-human transgenic vertebrate of claim 135, which is selected from the group consisting of mammals and birds.

140(original). The progeny non-human transgenic vertebrate of claim 137, which is selected from the group consisting of mammals and birds.

141(original). The non-human transgenic vertebrate of claim 135, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, farm and marine mammals, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

142(original). The non-human transgenic vertebrate of claim 135, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

143(original). The non-human transgenic vertebrate of claim 135, wherein the mammal is a farm or marine animal.

144(previously presented). The non-human transgenic vertebrate of claim 135, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken

145-151(canceled).

152(currently amended). A transgenic non-human vertebrate, comprising germ cells carrying in their genomes at least one xenogeneic polynucleotide comprised in a virus or virus-derived DNA, said transgenic non-human vertebrate having received an injection in its testis comprised in a virus or virus-derived DNA of male germ cells comprising at least one polynucleotide

encoding a desired product comprised in a virus or virus-derived DNA and at least one polynucleotide encoding a genetic selection marker, said male germ cells comprising the polynucleotide being isolated or selected from a donor male non-human vertebrate with the aid of the selection marker, ~~and wherein the xenogeneic polynucleotide is one that does not encode oncogene products~~ wherein the polynucleotide expresses an agent which is of therapeutic benefit for use in human or veterinary medicine or well being or wherein the polynucleotide provides a suitable anatomical or physiological phenotype for human xenograft transplantation.

153(original) The transgenic non-human transgenic vertebrate of claim 152 wherein the polynucleotide comprises at least one biologically functional gene.

154(previously presented). A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide sequence, comprised in a virus or virus-derived DNA, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 152 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the transfected xenogeneic polynucleotide.

155(original). The progeny non-human transgenic vertebrate of claim 154, being a male comprising native male germ cells

transfected with a xenogeneic polynucleotide.

156(original). The non-human transgenic vertebrate of claim 152, which is selected from the group consisting of mammals and birds.

157(original). The progeny non-human transgenic vertebrate of claim 154, which is selected from the group consisting of mammals and birds.

158(original). The non-human transgenic vertebrate of claim 152, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

159(original). The non-human transgenic vertebrate of claim 152, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

160(original). The non-human transgenic vertebrate of claim 152, wherein the mammal is a farm or marine animal.

161(original). The vertebrate of claim 152, wherein the mammal is selected from the group of a bull and a pig, and the bird is a chicken.

162-167(canceled).

168(currently amended). A non-human transgenic vertebrate, or its progeny, comprising a native germ cell carrying in its genome at least one xenogeneic polynucleotide comprised in a

virus or virus-derived DNA, said polynucleotide having been incorporated into the genome of said germ cell through the steps of:

- (a) obtaining a male germ cell from a non-human vertebrate;
- (b) transfecting the germ cell in vitro with at least one polynucleotide encoding a desired product in the presence of a gene delivery mixture comprising at least one transfecting agent, and optionally a polynucleotide encoding a genetic selection marker, at about or below the vertebrate's body temperature and for a transfection-effective period of time; and allowing the polynucleotide encoding a desired product to be taken up by, and released into the germ cell, ~~and wherein the polynucleotide is one that does not encode oncogene products~~ wherein the polynucleotide expresses an agent which is of therapeutic benefit for use in human or veterinary medicine or well being or wherein the polynucleotide provides a suitable anatomical or physiological phenotype for human xenograft transplantation.

169(original). The non-human transgenic vertebrate of claim 168, wherein the polynucleotide comprises at least one biologically functional gene.

170(original). The progeny non-human transgenic vertebrate

of claim 168, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

171(original). The non-human transgenic vertebrate of claim 68, which is selected from the group consisting of mammals and birds.

172(original). The progeny non-human transgenic vertebrate of claim 170, which is selected from the group consisting of mammals and birds.

173(original). The non-human transgenic vertebrate of claim 168, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

174(original). The non-human transgenic vertebrate of claim 168, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

175(original). The non-human transgenic vertebrate of claim 168, wherein the mammal is a farm or marine animal.

176(original). The vertebrate of claim 168, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.

177-182(canceled).

183(new). A non-human transgenic vertebrate produced by the steps of:

- (a) administering by injection into a testis of a male non-human vertebrate a transfection mixture comprising at least one polynucleotide encoding a gene product in operable linkage with a promoter comprised in a lentivirus or lentivirus-derived DNA, wherein said testis contains the germ cells of the male non-human vertebrate, and wherein said germ cells are selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa; and
- (b) allowing the polynucleotide encoding a gene product to be taken up by, and released into, the germ cells so that the released polynucleotide comprised in a lentivirus or lentivirus-derived DNA is incorporated into the genome of the germ cells of said male non-human vertebrate.

184(new). The non-human transgenic vertebrate of claim 183, wherein the polynucleotide comprises at least one biologically functional gene.

185(new). A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide



sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 183 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the transfected xenogeneic polynucleotide.

186(new). The progeny non-human transgenic vertebrate of claim 185, being a male comprising native germ cells carrying in their genomes at least one xenogeneic polynucleotide.

187(new). The non-human transgenic vertebrate of claim 183, which is selected from the group consisting of mammals and birds.

188(new). The progeny non-human transgenic vertebrate of claim 185, which is selected from the group consisting of mammals and birds.

189(new). The non-human transgenic vertebrate of claim 183, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, farm and marine mammals, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

190(new). The non-human transgenic vertebrate of claim 183, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

191(new). The non-human transgenic vertebrate of claim 183, wherein the mammal is a farm or marine animal.

192(new). The non-human transgenic vertebrate of claim 183, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.

193(new). A transgenic non-human vertebrate, comprising germ cells carrying in their genomes at least one xenogeneic polynucleotide comprised in a lentivirus or lentivirus-derived DNA, said transgenic non-human vertebrate having received an injection in its testis comprised in a lentivirus or lentivirus-derived DNA of male germ cells comprising at least one polynucleotide encoding a desired product comprised in a lentivirus or lentivirus-derived DNA and at least one polynucleotide encoding a genetic selection marker, said male germ cells comprising the polynucleotide being isolated or selected from a donor male non-human vertebrate with the aid of the selection marker.

194(new) The transgenic non-human transgenic vertebrate of claim 193 wherein the polynucleotide comprises at least one biologically functional gene.

195(new). A progeny non-human transgenic vertebrate, carrying in its germ cells at least one xenogeneic polynucleotide sequence, comprised in a lentivirus or lentivirus-derived DNA, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 193 with a female of the same species, and selecting the bred progeny non-human transgenic

vertebrate for the presence of the transfected xenogeneic polynucleotide.

196(new). The progeny non-human transgenic vertebrate of claim 195, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

197(new). The non-human transgenic vertebrate of claim 193, which is selected from the group consisting of mammals and birds.

198(new). The progeny non-human transgenic vertebrate of claim 195, which is selected from the group consisting of mammals and birds.

199(new). The non-human transgenic vertebrate of claim 193, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

200(new). The non-human transgenic vertebrate of claim 193, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

201(new). The non-human transgenic vertebrate of claim 193, wherein the mammal is a farm or marine animal.

202(new). The vertebrate of claim 193, wherein the mammal is selected from the group of a bull and a pig, and the bird is a chicken.

203(new). A non-human transgenic vertebrate, or its progeny,

comprising a native germ cell carrying in its genome at least one xenogeneic polynucleotide comprised in a lentivirus or lentivirus-derived DNA, said polynucleotide having been incorporated into the genome of said germ cell through the steps of:

- (a) obtaining a male germ cell from a non-human vertebrate;
- (b) transfecting the germ cell in vitro with at least one polynucleotide encoding a desired product in the presence of a gene delivery mixture comprising at least one transfecting agent, and optionally a polynucleotide encoding a genetic selection marker, at about or below the vertebrate's body temperature and for a transfection-effective period of time; and allowing the polynucleotide encoding a desired product to be taken up by, and released into the germ cell.

204(new). The non-human transgenic vertebrate of claim 203, wherein the polynucleotide comprises at least one biologically functional gene.

205(new). The progeny non-human transgenic vertebrate of claim 203, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

206(new). The non-human transgenic vertebrate of claim 203, which is selected from the group consisting of mammals and birds.

207(new). The progeny non-human transgenic vertebrate of

claim 205, which is selected from the group consisting of mammals and birds.

208(new). The non-human transgenic vertebrate of claim 203, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

209(new). The non-human transgenic vertebrate of claim 203, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

210(new). The non-human transgenic vertebrate of claim 203, wherein the mammal is a farm or marine animal.

211(new). The vertebrate of claim 203, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.